CITY OF TWIN FALLS (PWS 5420058)
SOURCE WATER ASSESSMENT FINAL REPORT (Part 1 of 2)

June 25, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for the City of Twin Falls, Twin Falls, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries for Wells #1, #2, #3, #4, and Hankins Rd. Wells #1 and #2. This report does not include the Blue Lakes wells, which will be discussed in a separate report. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The City of Twin Falls (PWS 5420058) drinking water system consists of ten ground water sources, six south of the Snake River and four north of the Snake River. This report addresses the six southern wells: Hankins Rd. #1; and Hankins Rd. #2; Well #1; Well #2; Well #3; Well #4. The two Hankins Rd. wells are located near the southeast reservoir and are manifolded together. Wells #1-4 are located near the south reservoir and are manifolded together. A review of the Idaho Drinking Water Information System (DWIMS) revealed water quality information for the City of Twin Falls drinking water system. The sample locations for the six wells are located at the two manifolds. Consequently, any chemical detections recorded in DWIMS for the south reservoir manifold apply to Wells #1-4, while detections recorded for the southeast reservoir manifold apply to the two Hankins Rd. wells. No microbial contaminants were detected in water samples collected from either the south or the southeast reservoir manifolds.

In January 2000, trihalomethanes, a volatile organic compound (VOC), were detected in a water sample collected from the southeast reservoir manifold at a concentration of 43.5 micrograms per liter (µg/l). In January and again in August 2000, trihalomethanes were detected in water samples collected from the south reservoir manifold at a concentration of 24.3 µg/l and 19.7 µg/l, respectively. The Maximum Contaminant Level (MCL) for total trihalomethanes is 100 µg/l. The City of Twin Falls treats its drinking water with chlorine prior to distribution. Trihalomethanes are commonly detected in water treated with chlorine. Consequently, the detection of trihalomethanes in the treated water is not considered source water contamination. Trihalomethane samples were collected at locations in the distribution system that are representative of the longest residence time for water in the system, and are indicative of the highest potential for trihalomethanes in the water that a customer could drink.

In April 1999, toluene and total xylenes were detected in a water sample collected from the southeast reservoir manifold at concentrations of 1.1 µg/l and 1.7 µg/l, respectively. The MCLs for toluene and total xylenes are 1,000 µg/l and 10,000 µg/l, respectively. In September 2000, benzene was detected in one of two water samples collected from the southeast reservoir manifold at a concentration of 0.6 µg/l. The MCL for benzene is 5.10 µg/l.

In August 2000, the synthetic organic compound (SOC) Di (2-ethylhexyl) phthalate was detected in a water sample collected from Well #2, before the manifold, at a concentration of 0.6 µg/l. Split confirmation samples were collected from the manifold and Wells #1, #3, and #4 and no Di (2-ethylhexyl) phthalate was detected. The MCL for Di (2-ethylhexyl) phthalate is 6.0 µg/l. No SOCs were detected in water samples collected from the southeast reservoir manifold.

From April 1994 to February 2001, nitrates were detected in four water samples collected from the southeast reservoir manifold at concentrations ranging from 5.1 milligrams per liter (mg/l) to 5.38 mg/l. From January 1994 to February 2001, nitrates were detected in fifteen water samples collected from the south reservoir manifold at concentrations ranging from 2.8 mg/l to 4.2 mg/l. These detections are below the MCL for nitrate of 10 mg/l.

From June 1997 to February 2001, barium was detected in three water samples collected from the southeast reservoir manifold at concentrations ranging from 0.028 mg/l to 0.04 mg/l. From April 2000 to February 2001, barium was detected in three water samples collected from the south reservoir manifold at concentrations ranging from 0.03 milligrams per liter (mg/l) to 0.04 mg/l. The MCL for barium is 2.0 mg/l. In April 2000 and again in February 2001, chromium was detected in two water samples collected from the southeast reservoir manifold at concentrations of

0.014 mg/l and 0.015 mg/l, respectively. From April 2000 to February 2001, chromium was detected in three water samples collected from the south reservoir manifold at concentrations ranging from 0.011 mg/l to 0.017 mg/l. The MCL for chromium is 0.1 mg/l. From June 1999 to March 2001, arsenic was detected in nine water samples collected from the southeast reservoir manifold at concentrations ranging from 0.007 mg/l to 0.0172 mg/l. From January 1994 to March 2001, arsenic was detected in twenty-six water samples collected from the south reservoir manifold at concentrations ranging from 0.0055 mg/l to 0.0154 mg/l. These concentrations are below the current MCL for arsenic of 0.05 mg/l. The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates. The inorganic compounds (IOCs), arsenic, barium, and chromium detected in water samples collected from the south and southeast reservoir manifolds may be naturally occurring in the formations in which the wells were developed.

A Sanitary Survey conducted in 1998 determined that the City of Twin Falls drinking water system was in substantial compliance with current public drinking water system standards. In terms of total susceptibility, Well #1 rated high for susceptibility to potential IOC and SOC contamination, and moderate for susceptibility to potential VOC and microbial contamination. This rating is due to aquifer properties, well construction, land use, and the presence of a nitrate priority area and an organics priority area (for pesticides) within the source water assessment area. In terms of total susceptibility, Well #2 rated high for susceptibility to potential IOC, VOC, SOC, and microbial contamination. This rating is due to aquifer properties, well construction, land use, and the presence of a nitrate priority area and an organics priority area (for pesticides) within the source water assessment area. Well #2 automatically rated high for SOC susceptibility due to the detection of Di (2-ethylhexyl) phthalate at the wellhead. In terms of total susceptibility, Wells # 3 and #4 rated moderate for susceptibility to potential IOC, VOC, SOC, and microbial contaminants due to aquifer properties, land use, and the presence of a nitrate priority area within the source water assessment area. In terms of total susceptibility, the two Hankins Rd. wells rated high for susceptibility to potential VOC contamination and moderate for susceptibility to potential IOC, SOC, and microbial contamination. The Hankins Rd. wells rated automatically high for VOC susceptibility due to the detection of benzene, toluene, and total xylenes at the wellhead. The moderate ratings for the Hankins Rd. wells for IOC, SOC, and microbial susceptibility are due to aquifer properties, land use, and the presence of a nitrate priority area within the source water assessment area.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the City of Twin Falls, source water protection activities should first focus on implementing the improvements outlined in the 1998 Sanitary Survey. Since nitrate levels approach or exceed 50% of the MCL and arsenic concentrations approach or exceed the proposed MCL, the City of Twin Falls should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat these chemicals. Disinfection practices should be optimized to minimize the formation of trihalomethanes in the treated drinking water. Any spills from the identified potential contaminant sources in the source water assessment areas should be monitored carefully. Most of the source water protection designated area is outside the direct jurisdiction of The City of Twin Falls. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of the City of Twin Falls. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CITY OF TWIN FALLS, TWIN FALLS COUNTY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Twin Falls drinking water system is a community system that serves approximately 36,000 people through 12,000 connections. This report addresses the six ground water wells located south of the Snake River. The four Blue Lakes Wells, located north of the Snake River, will be addressed in a separate report. The southeast reservoir manifold connects the two Hankins Rd. wells, located southeast of Twin Falls (Figure 1). The south reservoir manifold connects wells #1-4, located due south of Twin Falls (Figure 1).

Nitrates and arsenic represent the main water chemistry issues recorded for the six wells. Nitrate concentrations detected in water samples collected from the southeast manifold from April 1999 to February 2001 range from 51% to 54% of the MCL for nitrate, 10 mg/l. Nitrate concentrations detected in water samples collected from the south manifold from January 1994 to February 2001 range from 28% to 42% of the MCL for nitrate. While arsenic concentrations detected in water samples collected from both manifolds are below the current MCL of 0.05 mg/l, historic levels would approach or exceed the proposed MCL of 0.01 mg/l for arsenic.

Barium and chromium were detected in the past in water samples collected from both manifolds. These concentrations are well below the respective MCLs for barium and chromium. The IOCs arsenic, barium, and chromium detected in the City of Twin Falls drinking water system may be naturally occurring in the formations in which the wells were developed. Single detections of benzene, toluene, and total xylenes in water samples collected from the southeast reservoir manifold in were far below the MCLs for these VOCs. A single detection of Di (2-ethylhexyl) phthalate in a water sample collected from Well #2 was well below the MCL. No microbial contaminants were detected in water samples collected from the south or southeast reservoir manifolds.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Snake River Plain Aquifer in the vicinity of Twin Falls, Idaho. The computer model used site specific data, assimilated by DEQ from a variety of sources including the City of Twin Falls well logs, other local area well logs, and hydrogeologic reports summarized below.

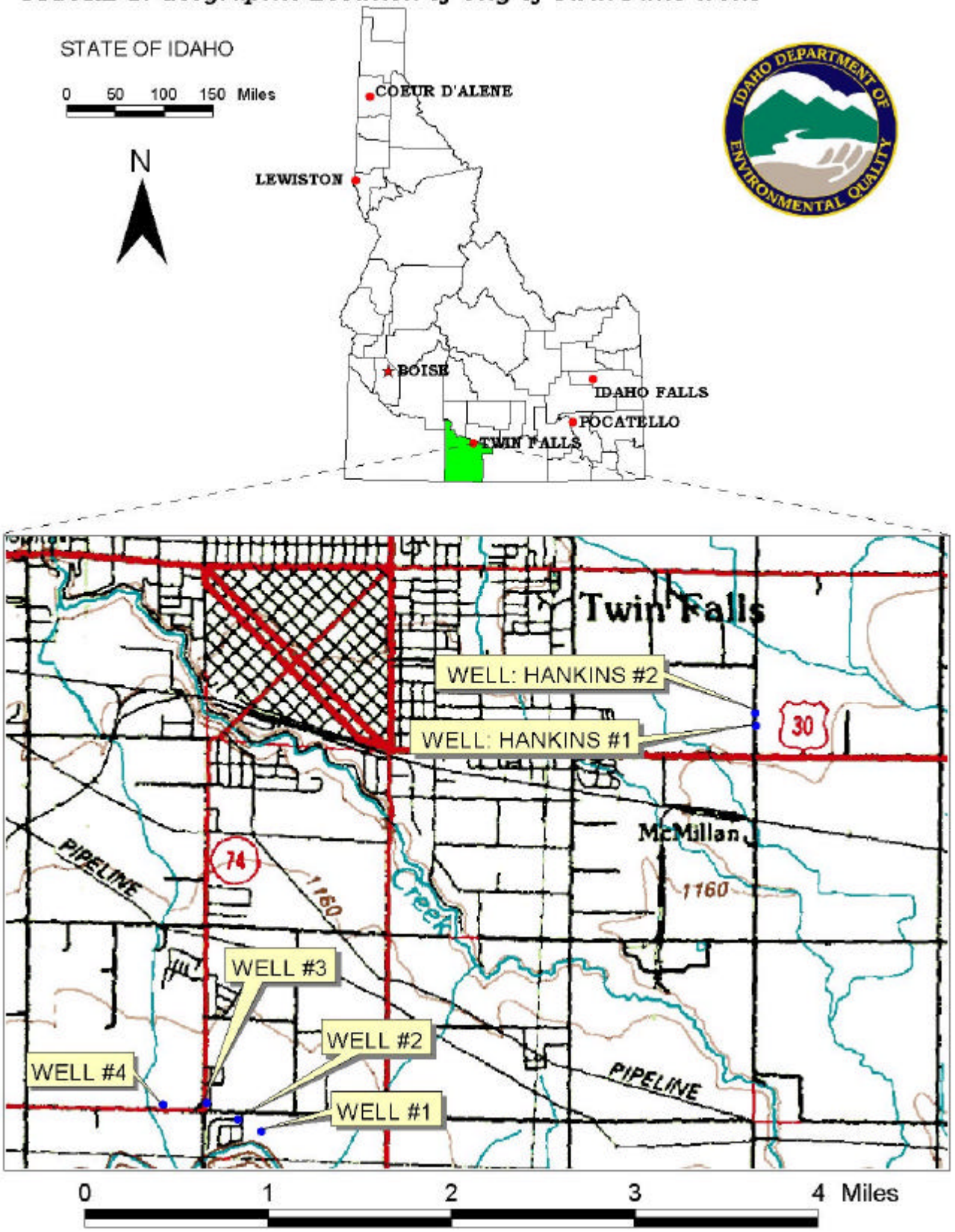
The City of Twin Falls wells extract water from the Banbury Basalt which overlies the Idavada Volcanics. The Idavada Volcanics unit consists of welded ash and tuff, rhyolite, and some basalt flows. The Idavada Volcanics are up to 2,000 feet thick in the Twin Falls area and contain fractures and columnar joints, allowing some mixing of the geothermal groundwater in the Idavada Volcanics with groundwater in the Banbury Basalt (Lewis and Young, 1989). The Banbury Basalt is of variable thickness and is the primary non-geothermal aquifer in the Twin Falls area (Moffat and Jones, 1984). Basalt flows fracture at the surface as they cool. The fractures occur in the horizontal direction throughout the flow with localized, vertical fractures present in some areas. The Banbury Basalt is fractured and contains thin sedimentary interbeds. These fractures and sedimentary interbeds comprise the water producing zones in the Banbury Basalt. (Cosgrove, et al., 1997).

Regional ground water flow is to the north, but may vary with proximity to major creeks and the Snake River (Lewis and Young, 1989). Precipitation in the area is around 9 inches per year (Lewis and Young, 1989), however, a significant amount of infiltration occurs due to irrigation practices as well as canal seepage and loss from surface waters. Water leaves the area through consumptive use, loss to the Snake River, or underflow into the northern part of the Snake River Plain Aquifer (Cosgrove, et al., 1997).

The delineated source water assessment area for the Hankins Rd. Wells #1 and #2 (southeast reservoir manifold) can best be described as a widening corridor 1.1 miles wide at the wellhead to 2.8 miles wide at the extent of the

delineation, 6.2 miles from the wellheads (Figure 2). The delineated source water assessment area for Wells #1-4 (south reservoir manifold) can best be described as a corridor, approximately 4 miles wide and 6 miles long extending to the south (Figure 3). The actual data used by DEQ in determining the source water assessment delineation area is available upon request.

FIGURE 1. Geographic Location of City of Twin Falls Wells



Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside the City of Twin Falls source water assessment area is irrigated agriculture. Land use within the immediate area of the wellheads consists of commercial and residential property as well as irrigated agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during April 2001. This process involved identifying and documenting potential contaminant sources within the City of Twin Falls Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ.

The Hankins Rd. wells have a delineated source water assessment area that contains forty-two identified potential contaminant sources; thirty in the 3-year time of travel zone (Table 1, Attachment A). Wells #1-4 have a delineated source water assessment area that contains forty-six identified potential contaminant sources; eleven in the 3-year time of travel zone (Table 2, Attachment A). Figures 2, 3, and 3b (Attachment B) show the location of these potential contaminant sites relative to the wellheads.

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking. The susceptibility ranking worksheets can be found in Attachment C.

Hydrologic Sensitivity

Hydrologic sensitivity to potential contamination is high for all six wells (Table 3). This reflects the nature of the soils being in the moderately-drained to well-drained class which could allow rapid downward movement of contaminants. According to the well logs, the vadose zone (zone from land surface to the water table) is predominantly fractured basalt, which could provide a pathway for potential contaminants, allowing them to mix

with the source water. Ground water exists within 300 feet of the surface and the wells do not contain at least 50 cumulative feet of low permeability units that could retard downward movement of contaminants.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The IDWR Well Construction Standards Rules (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the Recommended Standards for Water Works (1997) during construction. The system construction score is low for all the wells except Well #2, which ranks moderate (Table 3). A low system construction score is considered protective of source water against potential contaminants. A Sanitary Survey, conducted in 1998, found that the system was in substantial compliance with wellhead and surface seal standards. The wells are not in the 100-year flood zone and are protected from surface flooding. All six wells have the required 50-foot buffer around the wellhead.

Well logs exist for all six wells and show that the highest water production zones for the wells are over 100 feet below static water level. Greater distance between the static water level and the major production zone creates a buffer between potential contaminants and the source water intake, providing greater opportunity for attenuation or adsorption of contaminants. The casings of all the wells, except Well #2, were extended into low a permeability unit, protecting the wells from laterally migrating contaminants. Well #2 earned a moderate ranking because the casing and annular seal only extend 9.5 feet into the subsurface rather than the required 20-foot minimum. Wells #3, #4, and the two Hankins Rd. wells met all IDWR Well Construction Standards and Rules (1993). The casing diameters for Well #1 and Well #2 are 16 inches and 20 inches, respectively, with 0.25-inch thick walls. The casing thickness for both wells does not meet IDWR standards of 0.375-inch thick walls for 16 and 20-inch diameter casing as listed in the Recommended Standards for Water Works (1997). Under current standards, PWS wells producing less than 50 gallons per minute (gpm) are required to have a 4 hour minimum pump test and those producing greater than 50 gpm are required to have a 6 hour minimum pump test.

Potential Contaminant Sources and Land Use

All six City of Twin Falls wells rated high for potential contaminant sources and land use (Table 3) for IOCs (e.g., nitrates), VOCs (e.g., petroleum products) and SOCs (e.g., pesticides), and moderate for microbial contamination (e.g., total coliform). Agricultural land use, the presence of a nitrate priority and an organics priority area (for pesticides), and the presence of numerous potential contaminant sources within the delineated source water assessment areas contributed to the high and moderate ratings. The moderate rating for potential microbial contamination is due to the fact that potential microbial contamination sources are not counted outside of the 3-year time of travel. It is unlikely that microbes released in the 6 and 10-year time of travel zones would survive to contaminate the source water.

Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, Well #1 rated high for susceptibility to potential IOC and SOC contamination, and moderate for susceptibility to potential VOC and microbial contamination. This rating is due to aquifer properties, well construction, land use, and the presence of a nitrate priority area and an organics priority area (for pesticides) within the source water assessment area. In terms of total susceptibility, Well #2 rated high for susceptibility to potential IOC, VOC, SOC, and microbial contamination. This rating is due to aquifer properties, well construction, land use, and the presence of a nitrate priority area and an organics priority area (for pesticides) within the source water assessment area. Well #2 automatically rated high for SOC susceptibility due to the detection of Di (2-ethylhexyl) phthalate at the wellhead. In terms of total susceptibility, Well # 3 and

#4 rated moderate for susceptibility to potential IOC, VOC, SOC, and microbial contaminants due to aquifer properties, land use, and the presence of a nitrate priority area within the source water assessment area. In terms of total susceptibility, the two Hankins Rd. wells rated high for susceptibility to potential VOC contamination and moderate for susceptibility to potential IOC, SOC, and microbial contamination. The Hankins Rd. wells rated automatically high for VOC susceptibility due to the detection of benzene, toluene, and total xylenes at the wellhead. The moderate ratings for the Hankins Rd. wells for IOC, SOC, and microbial susceptibility are due to aquifer properties, land use, and the presence of a nitrate priority area within the source water assessment area.

Table 3. Summary of the City of Twin Falls Susceptibility Evaluation

Well	**Susceptibility Scores[1]**									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	H	H	M	L	H	M	H	M
Well #2	H	H	H	H	M	M	H	H	H*	H
Well #3	H	H	H	H	M	L	M	M	M	M
Well #4	H	H	H	H	M	L	M	M	M	M
Hankins #1	H	H	H	H	M	L	M	H**	M	M
Hankins #2	H	H	H	H	M	L	M	H**	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H* = Well ranked automatically high for susceptibility to potential SOC contamination due to an SOC detection at the wellhead (the south reservoir manifold).
H = Well ranked automatically high for susceptibility to potential VOC contamination due to a VOC detection at the wellhead (the southeast reservoir manifold).**

Susceptibility Summary

Nitrates and arsenic represent the main water chemistry issues recorded for the six wells. Nitrate concentrations detected in water samples collected from the southeast manifold from April 1999 to February 2001 range from 51% to 54% of the MCL for nitrate, 10 mg/l. Nitrate concentrations detected in water samples collected from the south manifold from January 1994 to February 2001 range from 28% to 42% of the MCL for nitrate, 10 mg/l. While arsenic concentrations detected in water samples collected from both manifolds are below the current MCL of 0.5 mg/l, historic levels would approach or exceed the proposed MCL of 0.01 mg/l for arsenic.

Barium and chromium were detected in the past in water samples collected from both manifolds. These concentrations are well below the respective MCLs for barium and chromium. The IOCs arsenic, barium, and chromium detected in the City of Twin Falls drinking water system may be naturally occurring in the formations in which the wells were developed. Single detections of benzene, toluene, and total xylenes in water samples collected from the southeast reservoir manifold were far below the MCLs for these VOCs. A single detection of Di (2-ethylhexyl) phthalate in a water sample collected from Well #2 was well below the MCL. No microbial contaminants were detected in water samples collected from the south or southeast reservoir manifolds.

A nitrate priority area and an organics priority area (for pesticides) cross the City of Twin Falls source water areas. Countywide farm chemical use is considered high in this area and the delineated source water area for the wells is surrounded by a significant amount of irrigated agricultural land. Additionally, multiple potential sources of contamination exist in the City of Twin Falls source water area and the aquifer properties make the source water susceptible to potential spills from these sites.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For the City of Twin Falls, source water protection activities should first focus on implementing the improvements outlined in the Sanitary Survey. Since nitrate levels approach or exceed 50% of the MCL and arsenic concentrations approach or exceed the proposed MCL, the City of Twin Falls should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat these chemicals. Disinfection practices should be optimized to minimize the formation of trihalomethanes in the treated drinking water. Any spills from the identified potential contaminant sources in the source water assessment areas should be monitored carefully to prevent contaminants from infiltrating to the ground water producing zones. The highly fractured nature of the basalt aquifer could lead to cross-contamination from shallower fractures to deeper fractures depending on well construction.

Most of the designated source water protection area is outside the direct jurisdiction of the City of Twin Falls. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of the City of Twin Falls. Partnerships with state and local agencies and industry groups should be established and are critical to success. Continued vigilance in keeping the well protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office (208) 736-2190

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as "Superfund" is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

City of Twin Falls
Potential Contaminant Source Tables

Table 1. The City of Twin Falls Hankins Rd. Wells #1 and #2 Potential Contaminant Inventory

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
1	UST; Closed	0-3	Database Search	VOC, SOC
2	Contractor; UST, Closed	0-3	Database Search	IOC, VOC, SOC
3	UST; Closed	0-3	Database Search	IOC, VOC, SOC
4	Contractor; UST, Closed	0-3	Database Search	IOC, VOC, SOC
5	Gas Station; Open	0-3	Database Search	VOC, SOC
6	Farm Equipment (Wholesale)	0-3	Database Search	IOC, VOC, SOC
7	Farm Equipment (Wholesale)	0-3	Database Search	IOC, VOC, SOC
8	Potato Sprout Inhibitors	0-3	Database Search	IOC, VOC, SOC
9	Pumps (Wholesale)	0-3	Database Search	IOC, VOC, SOC
10	Farm Equipment (Wholesale)	0-3	Database Search	IOC, VOC, SOC
11	Truck-Dealers	0-3	Database Search	VOC, SOC
12	Campgrounds	0-3	Database Search	IOC, VOC, SOC, Microbes
13	Hydraulic Equipment & Supplies	0-3	Database Search	IOC, VOC, SOC
14	General Contractors	0-3	Database Search	IOC, VOC, SOC
15	Metal-Rolling & Forming	0-3	Database Search	IOC, VOC, SOC
16	Government-Forestry Services	0-3	Database Search	IOC, VOC, SOC
17	Contractors-Equip/Supls-Dlrs/Svc	0-3	Database Search	IOC, VOC, SOC
18	Welding Equipment & Supplies	0-3	Database Search	IOC, VOC, SOC
19	Storage-Household & Commercial	0-3	Database Search	IOC, VOC, SOC, Microbes
20	Amalgamated Sugar - TRI site	0-3	Database Search	IOC, VOC, SOC, Microbes
21	RCRIS Site	0-3	Database Search	IOC, VOC, SOC
22	RCRIS Site	0-3	Database Search	IOC, VOC, SOC, Microbes
23	RCRIS Site	0-3	Database Search	IOC, VOC, SOC
24	Truck Rent and Lease	0-3	Database Search	IOC, VOC, SOC
25	SARA Site	0-3	Database Search	IOC, VOC, SOC
26	Construction & Mining Equipment	0-3	Database Search	IOC, VOC, SOC
27	Potato Processing	0-3	Database Search	IOC, VOC, Microbes
28	Sugar Beat Waste	0-3	Database Search	IOC, VOC, Microbes
29	Farm; UST, Closed	3-6	Database Search	IOC, VOC, SOC, Microbes
30	201-500 cows	3-6	Database Search	IOC, Microbes
31	Well Drilling	3-6	Database Search	IOC, VOC, SOC
32	Trucking-Motor Freight	3-6	Database Search	IOC, VOC, SOC
33	Feed-Dealers (Wholesale)	3-6	Database Search	IOC, SOC, Microbes
34	Livestock Feeding	3-6	Database Search	IOC, Microbes
35	Sugar Beat Waste	3-6	Database Search	IOC, VOC, Microbes
36	<=200 cows	6-10	Database Search	IOC, Microbes
37	Machine Shops	6-10	Database Search	IOC, VOC, SOC
	Highway 30	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Rock Creek	3-6	GIS Map	IOC, VOC, SOC, Microbes
	Pipeline	3-6, 6-10	GIS Map	VOC, SOC
	Low Line Canal	6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 2. The City of Twin Falls Wells #1, #2, #3, and #4 Potential Contaminant Inventory

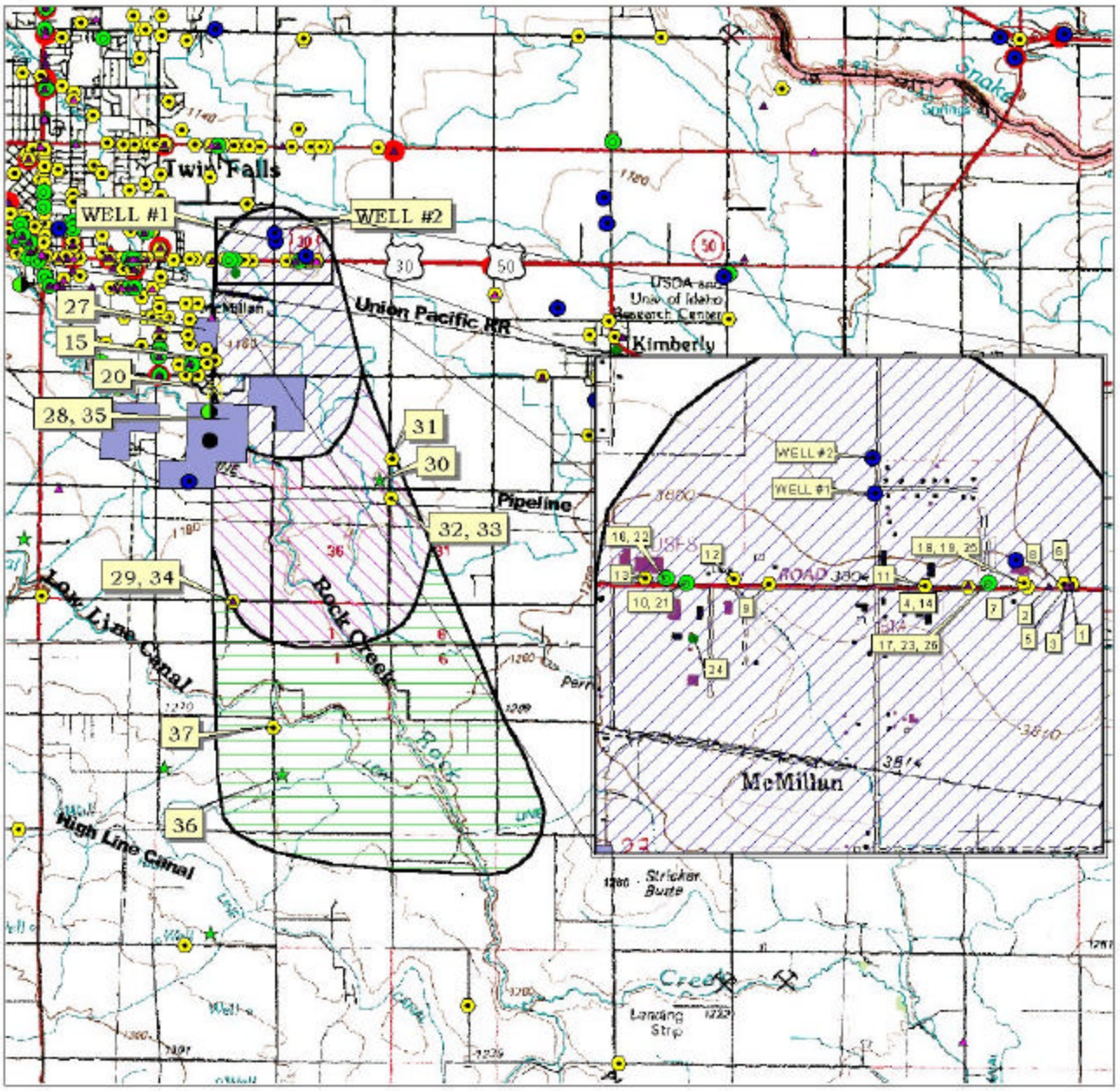
Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
1	UST; Open	0-3	Database Search	VOC, SOC
2	≤ 200 cows	0-3	Database Search	IOC, Microbes
3	≤ 200 cows	0-3	Database Search	IOC, Microbes
4	Livestock Hauling	0-3	Database Search	IOC, Microbes
5	Carpet & Rug Cleaners	0-3	Database Search	IOC, VOC
6	Excavating Contractors	0-3	Database Search	IOC, VOC, SOC
7	Window Cleaning	0-3	Database Search	IOC
8	Automobile Lubrication Service	0-3	Database Search	IOC, VOC, SOC
9	Sand & Gravel Pit	0-3	Database Search	IOC, VOC, SOC
10	Proposed Recharge Area	0-3	Database Search	IOC, VOC, SOC, Microbes
11	LUST Site Cleanup Completed , Impact: Unknown	3-6	Database Search	VOC, SOC
12	LUST Site Cleanup Completed , Impact: Unknown	3-6	Database Search	VOC, SOC
13	LUST Site Cleanup Completed , Impact: Unknown	3-6	Database Search	VOC, SOC
14	LUST Site Cleanup Completed , Impact: Unknown	3-6	Database Search	VOC, SOC
15	UST; Open	3-6	Database Search	VOC, SOC
16	Aircraft Owner; UST, Closed	3-6	Database Search	IOC, VOC, SOC
17	Air Taxi (Airline); UST, Open	3-6	Database Search	IOC, VOC, SOC
18	Not Listed; UST, Closed	3-6	Database Search	VOC, SOC
19	Aircraft Owner; UST, Closed	3-6	Database Search	IOC, VOC, SOC
20	Federal Non-Military; UST, Closed	3-6	Database Search	IOC, VOC, SOC
21	State Government; UST, Closed	3-6	Database Search	VOC, SOC
22	Air Taxi (Airline); UST, Closed	3-6	Database Search	IOC, VOC, SOC
23	Aircraft Owner; UST, Closed	3-6	Database Search	VOC, SOC
24	UST; Closed	3-6	Database Search	IOC, VOC, SOC
25	UST; Open	3-6	Database Search	IOC, VOC, SOC
26	City Government-Transportation Prgram	3-6	Database Search	VOC, SOC
27	Excavating Contractors	3-6	Database Search	IOC, VOC, SOC
28	Automobile Renting & Leasing	3-6	Database Search	IOC, VOC, SOC
29	Automobile Renting & Leasing	3-6	Database Search	IOC, VOC, SOC
30	Airports	3-6	Database Search	IOC, VOC, SOC
31	Aerial Applicators	3-6	Database Search	IOC, VOC, SOC
32	Aircraft Servicing & Maintenance	3-6	Database Search	IOC, VOC, SOC
33	Automobile Renting & Leasing	3-6	Database Search	IOC, VOC, SOC
34	Aircraft Servicing & Maintenance	3-6	Database Search	IOC, VOC, SOC
35	Air Cargo Service	3-6	Database Search	IOC, VOC, SOC
36	Aircraft-Dealers	3-6	Database Search	IOC, VOC, SOC
37	Air Cargo Service	3-6	Database Search	IOC, VOC, SOC
38	Aircraft Servicing & Maintenance	3-6	Database Search	IOC, VOC, SOC
39	Federal Government-Transpotation	3-6	Database Search	IOC, VOC, SOC
40	Twin Falls Airport Pesticide Dump Site	3-6	Database Search	IOC, SOC
41	RCRIS Site	3-6	Database Search	IOC, VOC, SOC
42	Crop Planting & Protection	3-6	Database Search	IOC, VOC, SOC
43	General Contractors	6-10	Database Search	IOC, VOC, SOC
44	Municipal, Active Landfill	6-10	Database Search	IOC, VOC, SOC, Microbes
	Low Line Canal	0-3, 3-6, 6-10	GIS Map	IOC, VOC, SOC,Microbes
	High Line Canal	3-6, 6-10	GIS Map	IOC, VOC, SOC,Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

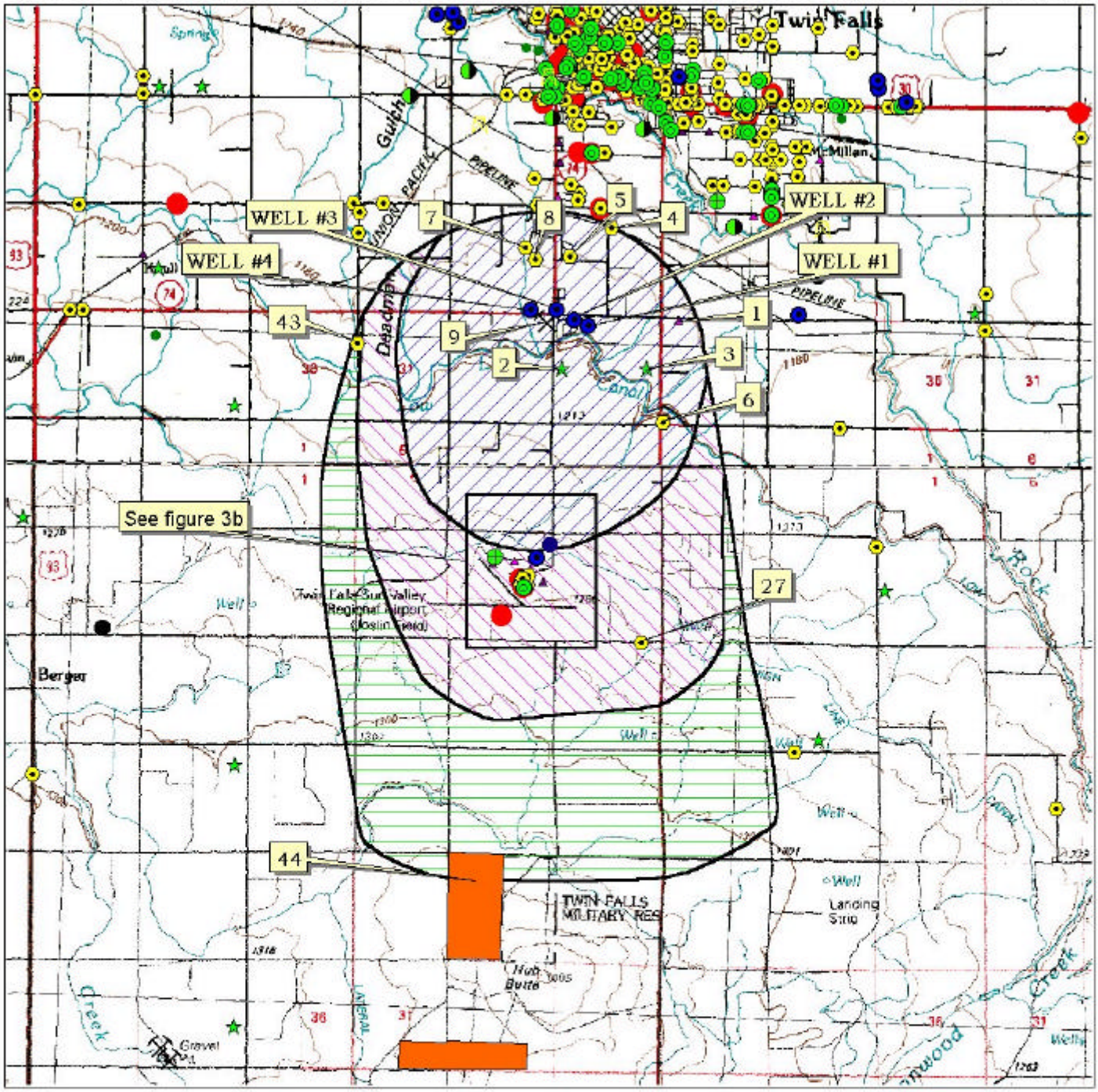
Attachment B

City of Twin Falls
Delineation Maps and Potential Contaminant Source Locations



PWS# 5420058
Hankins #1, #2

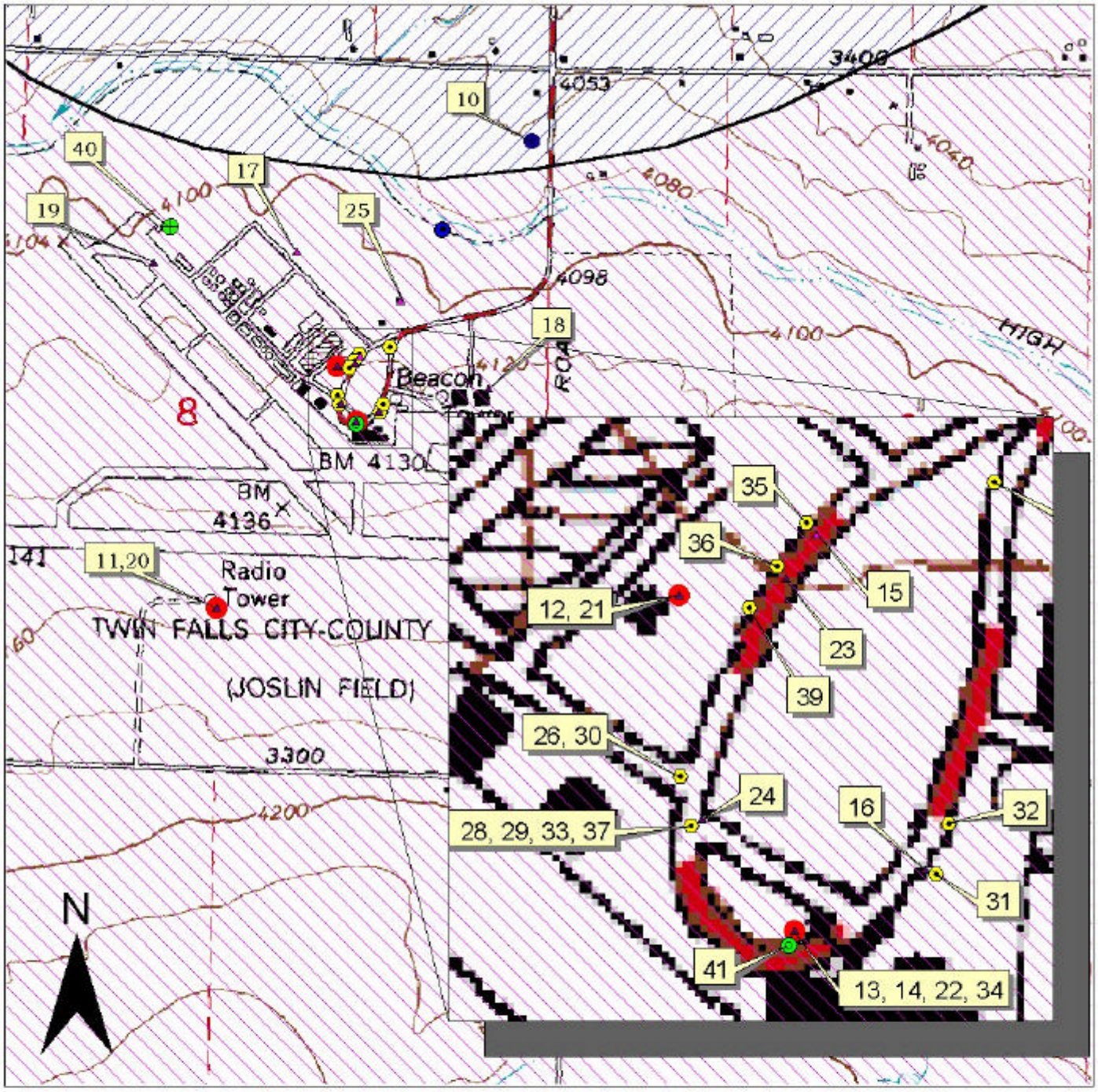
Figure 3. City of Twin Falls Delineation Map and Potential Contaminant Source Locations for Wells #1, #2, #3, and #4



PWS# 5420058

WELL #1-4

Figure 3b. City of Twin Falls Delineation Map and Potential Contaminant Source Locations for Wells #1, #2, #3, and #4



LEGEND

Time of Travel Zones
- 1 (1 yr TOT)
- 2 (5 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- CERCLIS Site
- RCRIS Site
- Dairy
- LUST Site
- Closed UST Site
- Open UST Site
- Business Mailing List
- NPDES Site
- Mine
- AST
- Toxic Release Inventory
- SARA Title III Site (EPCRA)
- Recharge Point
- Injection Well
- Group 1 Site
- Cyanide Site
- Landfill
- Wastewater Land App. Site

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 5420058

WELL #1-4

Attachment C

City of Twin Falls Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : TWIN FALLS CITY OF Well# : WELL #1 Public Water System Number 5420058 5/22/01 8:04:39 AM

1. System Construction			SCORE			
Drill Date		11/6/62				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	1998			
Well meets IDWR construction standards		NO	1			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		1			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	10	6	5	5
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or		YES	9	6	5	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			30	26	28	14
4. Final Susceptibility Source Score			13	12	13	12
5. Final Well Ranking			High	Moderate	High	Moderate

Ground Water Susceptibility Report Public Water System Name :TWIN FALLS CITY OF Well# : WELL #2 Public Water System Number 5420058 5/22/01 8:04:39 AM

1. System Construction		SCORE
Drill Date	8/13/61	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	998
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	3

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
	Total Hydrologic Score	6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	YES	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	10	6	5	5
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	9	6	5	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12

Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0

Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0

Cumulative Potential Contaminant / Land Use Score		30	26	28	14
4. Final Susceptibility Source Score		15	14	15	14
5. Final Well Ranking		High	High	High*	High

* Well rated automatically high for susceptibility to potential SOC contamination due to a SOC detection at the wellhead.

Ground Water Susceptibility Report Public Water System Name : TWIN FALLS CITY OF Well# : WELL #3 Public Water System Number 5420058 5/22/01 8:04:39 AM

1. System Construction		SCORE				
Drill Date		4/10/97				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	1988			
Well meets IDWR construction standards		YES	0			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		0			

2. Hydrologic Sensitivity			
Soils are poorly to moderately drained		NO	2
Vadose zone composed of gravel, fractured rock or unknown		YES	1
Depth to first water > 300 feet		NO	1
Aquitard present with > 50 feet cumulative thickness		NO	2
	Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	10	6	5	5
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or		YES	9	6	5	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			30	26	28	14
4. Final Susceptibility Source Score			12	11	12	11
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : TWIN FALLS CITY OF Well# : #4 Public Water System Number 5420058 5/22/01 8:04:39 AM

1. System Construction		SCORE				
Drill Date		7/28/99				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	1998			
Well meets IDWR construction standards		YES	0			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		0			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	10	6	5	5
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or		YES	9	6	5	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			30	26	28	14
4. Final Susceptibility Source Score			12	11	12	10
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : TWIN FALLS CITY OF Well# :Hankins Rd. #1 Public Water System Number 5420058 5/22/01 8:04:39 AM

1. System Construction		SCORE				
Drill Date		9/19/97				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	1998			
Well meets IDWR construction standards		YES	0			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		0			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		YES	NO	YES	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	27	30	28	8
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or		YES	31	30	28	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	18	12
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			30	26	30	14
4. Final Susceptibility Source Score			12	11	12	11
5. Final Well Ranking			Moderate	High*	Moderate	Moderate

* Well rated automatically high for susceptibility to potential VOC contamination due to a VOC detection at the wellhead.

Ground Water Susceptibility Report Public Water System Name : TWIN FALLS CITY OF Well# :Hankins Rd. #2 Public Water System Number 5420058 5/22/01 8:04:39 AM

1. System Construction		SCORE				
Drill Date		4/1/99				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	1988			
Well meets IDWR construction standards		YES	0			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		0			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		YES	NO	YES	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	27	30	28	8
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or		YES	31	30	28	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	18	12
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			30	26	30	14
4. Final Susceptibility Source Score			12	11	12	11
5. Final Well Ranking			Moderate	High*	Moderate	Moderate

* Well rated automatically high for susceptibility to potential VOC contamination due to a VOC detection at the wellhead.